

REMARKS

Claims 14-29 are pending in the present application. Claims 14 and 22 have been amended to replace the symbol “u” with “μ.” Support for this amendment may be found throughout the specification. Therefore, Claims 14-29 remain pending in the application.

Reexamination of the application and reconsideration of the rejections and objections are respectfully requested in view of the above amendments and the following remarks, which follow the order set forth in the Office Action.

Rejection under 35 U.S.C. § 112 second paragraph is now moot.

The Examiner has rejected Claims 14 and 22 under 35 U.S.C. 112, second paragraph, as being indefinite. Specifically, the Examiner asserts that “[i]n both independent claims there is recited “ug” which [is] vague and indefinite. The use of “u” has been inappropriately used in place of “μ.””

Claims 14 and 22 were amended to replace “u” with “μ.” As the rejection is now moot, withdrawal and reconsideration is respectfully requested.

Rejections under 35 U.S.C. § 103(a) are traversed.

Claims 14-20, and 22-29 were rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese patent 2001049414 (Endo et al., [sic, Hidekazu et al.], hereinafter “Endo”) in view of U.S. Patent No. 4,713,153 to Adriaensen et al., (Adriaensen). Applicants respectfully traverse the rejection for the following reasons.

Claim 14 recites a process for the preparation of a steel surface for hot-dip galvanising in a zinc based molten bath, comprising the steps of cleaning the surface by electrocleaning, ultrasonic cleaning, or brush cleaning, pickling the surface, and applying a protective layer to the surface by immersion in a flux solution, wherein the cleaning is performed to a level of less than 0.6 μg/cm² residual dirt, and the flux solution comprises a soluble bismuth compound. Claims 15-20 and 26 are dependent therefrom.

Claim 22 recites a process for single-dip galvanising of a steel surface using an aluminum containing molten zinc bath, comprising the steps of cleaning the surface by electrocleaning, ultrasonic cleaning, or brush cleaning, pickling the surface, applying a protective layer to the surface by immersion in a flux solution, and galvanising the surface by

single-dipping the surface in an aluminum containing molten zinc bath, where the cleaning is performed to a level of less than $0.6 \mu\text{g}/\text{cm}^2$ residual dirt, and the flux solution comprises a soluble bismuth compound. Claims 23-25 and 27-29 are dependent therefrom.

Endo (translated abstract) recites a flux for a hot dip zinc-magnesium-aluminum base alloy coating for a steel surface. Endo recites “degreasing and pickling of the steel sheet surface and drying aqueous treating liquid stuck on the steel surface after dipping into the aqueous treating liquid of the flux, and successively, dipping into Zn-Mg-Al base alloy bath . . .” Endo is silent as to a level of cleanliness of the steel surface. Endo is also silent as to surface cleaning by electro-cleaning or electropickling.

Adriaensen discloses surface cleaning methods where a ferrous strand is subjected to a low voltage alternating current, the frequency of which is modified as compared with a mains frequency of 50-60 Hz. (col 3, lines 1-14).

To establish a prima facie case of obviousness, three requirements must be satisfied. First, the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. *See In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988); *In re Skinner*, 2 USPQ2d 1788, 1790 (BPAI 1986).

Second, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. In other words, a hindsight analysis is not allowed. *See Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 18 USPQ2d 1016, 1023 (Fed. Cir. 1991). And the teachings or suggestions, as well as the expectation of success, must come from the prior art, not applicant's disclosure. *See In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991).

Lastly, the prior art reference or combination of references must teach or suggest the limitations of the claims. *See In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (C.C.P.A. 1970) (“All words in a claim must be considered in judging the patentability of that claim against the prior art.”).

The Examiner asserts that the Endo abstract discloses “cleaning, pickling, applying a protective layer by a flux solution of bismuth compound, galvanizing by single-dip in aluminum containing molten zinc bath, *where cleaning is performed to a level that removes residual dirt* (see english translated abstracts).” [emphasis added] *Office action mailed*

10/04/05, page 3. Applicants respectfully disagree with the Examiner's reading of the Endo et al. abstract. The Endo abstract is silent as to "a level" of cleanliness needed or required by the processes disclosed therein.

The Examiner acknowledges that Endo does not disclose the surface cleaning by electrocleaning further performed by electropickling. However, the Examiner asserts Adriaensen satisfies the deficiency of the Endo abstract in that Adriaensen discloses "surface cleaning by electrocleaning further performed by electro-pickling (col 2, lines 61-68; col 3, lines 1-14)." *Office action mailed 10/04/05, page 3.*

The Examiner concludes that "[i]t would have been obvious to one with ordinary skill in the art to include surface cleaning by electro-cleaning further performed by electropickling because Adriaensen teaches advantages (col 2, lines 47-66)." *Office action mailed 10/04/05, page 3.*

However, Endo is silent as to a level of cleanliness of less than $0.6 \mu\text{g}/\text{cm}^2$ residual dirt, as recited in claim 14 and 22, and neither alone or in combination with Adriaensen is a level of cleanliness disclosed or suggested. Applicants direct the Examiner's attention to the specification, page 4 lines 24-27, where Applicants disclose that "[s]amples which were not properly cleaned (with an amount of soil corresponding to 1 or $2 \mu\text{g}/\text{cm}^2$) and which therefore had water breaks on the surface demonstrated pinholes in Galfan coatings and bad adhesion after treatment with a Bi containing flux." Applicants also disclose on page 12, lines 6-9, that "whenever the proper surface cleaning had not taken place . . . the coating quality was severely deteriorated by the presence of pinholes and bad coating adhesion."

Therefore, in the absence of all of the elements of the claim being recited among the combination of Endo in view of Adriaensen, there cannot be any suggestion to combine the said documents or any likelihood of success upon their combination. Thus, the requirements for a *prima facie* case of obviousness are not met. Withdrawal and reconsideration of the rejection is respectfully requested.

Claim 21 was rejected under 35 U.S.C. 103(a) as being unpatentable over Endo in view of Adriaensen and further in view of British patent 896,866 (GB 896,866, Boller et al). Applicants respectfully traverse the rejection for the following reasons.

Claim 21 recites the elements of claims 14 and claim 19 wherein the flux solution further comprises at least 7 wt% NH_4Cl and further comprises between 15 and 35 wt% ZnCl_2 .

Boller et al. discloses a process for applying a protective coating to ferrous articles which comprises first plating the ferrous surface with a non-ferrous metal having a low

solubility in liquid aluminum and then applying a hot-dipped aluminum or aluminum alloy coating. The process disclosed by Boller et al. requires exposure of the steel to a galvanic coating bath (21), a fused alkali chloride bath (22) and finally a molten aluminum or alloy bath (24). Boller et al. is silent as to a level of surface cleanliness.


The Examiner acknowledges that Endo in view of Adriaensen does not disclose a flux solution containing between 15-35 wt% of ZnCl_2 . *Office action mailed 10/04/05, page 4.* However, the Examiner asserts that Boller et al. satisfies this deficiency in the combination of Endo and Adriaensen by disclosing a flux solution between 15-35 wt% of ZnCl_2 (p 4, lines 5-15, GB 896,866). However, there is no mention or suggestion of a level of cleanliness less than $0.6 \mu\text{g}/\text{cm}^2$ in Boller et al. or in the combination of Boller et al. with Endo in view of Adriaensen et al. As the combination of the above cited documents is silent as to the level of cleanliness of less than $0.6 \mu\text{g}/\text{cm}^2$ residual dirt, as in dependent claim 21, and because the combination of documents fail to disclose or suggest a level of cleanliness, all the elements recited in claim 21 have not been found in the cited documents. In the absence of all of the elements of the claim being recited among the combination of documents, any suggestion to combine the said documents is lacking, and any likelihood of success from such a combination is lacking. Thus, the requirements for a *prima facie* case of obviousness are not met. Therefore, withdrawal and reconsideration of the rejection is respectfully requested.

For the foregoing reasons, claims 14-29 are considered allowable. A Notice to this effect is respectfully requested. If any questions remain, the Examiner is invited to contact the undersigned at the number given below.

Respectfully submitted,

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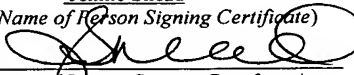
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